

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A solid oxide fuel cell comprising:

a plurality of electric power-generating elements, each including a solid oxide electrolyte and a porous electrode section on the solid oxide electrolyte;

a plurality of first current collector layers for the electrode sections, respectively;

a plurality of separators;

wherein the plurality of electric power-generating elements, the plurality of first current collector layers and the plurality of separators are stacked in a stack direction such that each of the plurality of separators is disposed between and electrically interconnects an adjacent two of the plurality of electric power-generating elements, and each of the plurality of first current collector layers is operatively disposed between one of the plurality of separators and the electrode section of an adjacent one of the plurality of electric power-generating elements, each of the plurality of first current collector layers having a first surface and a second surface that is opposite to the first surface: [[,]]

a plurality of gas supply flow channels, each defined between one of the plurality of separators and the first surface of an associated one of the plurality of first current collector layers;

a plurality of gas supply branch flow passages branched off from one of the plurality of gas supply flow channels, the plurality of gas supply branch flow passages beginning at the first surface and terminating at a plurality of blowout ports, respectively, wherein ~~the gas supply branch flow passages and the~~ plurality of blowout ports are formed within ~~[[a]]~~ the second surface of the associated one of the plurality of first current collector layers which is disposed adjacent the electrode section of an associated one of the plurality of electric power-generating elements; and

a plurality of gas exhaust flow channels formed inwardly from the second surface of the associated one of the plurality of first current collector layers, wherein the plurality of gas exhaust flow channels are configured to receive consumed gas that is pushed by a fresh

supply of gas out of the blowout ports and to dissipate the consumed gas over an entire area of the second surface of the associated one of the plurality of first current collector layers.

2. (Original) The solid oxide fuel cell according to claim 1, wherein the electrode section includes a porous oxidizer electrode formed on one surface of the solid oxide electrolyte to be supplied with oxidizer gas and a porous fuel electrode formed on the other surface of the solid oxide electrolyte to be supplied with fuel gas.

3. (Original) The solid oxide fuel cell according to claim 2, wherein the plurality of first current collector layers are disposed adjacent to the oxidizer electrode and the fuel electrode, respectively.

4. (Previously Presented) The solid oxide fuel cell according to claim 1, wherein the plurality of gas supply branch flow passages are branched off from a gas flow channel and configured to reach the electrode section of the associated one of the plurality of electric power-generating elements via the associated one of the plurality of first current collector layers.

5. (Original) The solid oxide fuel cell according to claim 1, wherein the plurality of first current collector layers include porous electric conductors.

6. (Previously Presented) The solid oxide fuel cell according to claim 1, wherein the gas exhaust flow channels have recesses, subjected to pore stop processing, which reach the electrode section of the associated one of the plurality of electric power-generating elements.

7. (Original) The solid oxide fuel cell according to claim 1, wherein second current collector layers, each composed of a porous electric conductor, are placed between the plurality of electric power-generating elements and the plurality of first current collector layers, respectively.

8. (Previously Presented) The solid oxide fuel cell according to claim 7, wherein the remnant of gas provided to the associated one of the plurality of electric power-generating elements via the plurality of gas supply branch flow passages is exhausted via an associated one of the second current collector layers.

9. (Previously Presented) The solid oxide fuel cell according to claim 1, wherein the plurality of gas exhaust flow channels are larger in an outer peripheral area than that of the gas exhaust flow channels in a central area of the associated one of the plurality of electric power-generating elements.
10. (Original) The solid oxide fuel cell according to claim 1, wherein cross sectional areas of the plurality of gas exhaust flow channels are larger in an outer peripheral area than those of the gas exhaust flow channels in a central area of the associated one of the plurality of electric power-generating elements.
11. (Previously Presented) The solid oxide fuel cell according to claim 1, wherein the plurality of first current collector layers include a frame section formed with a plurality of openings, and porous electric current conductors correspondingly placed adjacent to the plurality of openings, wherein the gas supply flow channels are branched off from the plurality of openings.
12. (Original) The solid oxide fuel cell according to claim 11, wherein the frame section is made of metal and a size of the plurality of openings is greater in an outer peripheral area than that of the openings in a central area of the associated one of the plurality of electric power-generating elements.
13. (Previously Presented) The solid oxide fuel cell according to claim 11, wherein a width in which the frame section overlaps the porous electric current conductor is greater than a thickness of the porous electric current conductor in the stack direction.
14. (Original) The solid oxide fuel cell according to claim 1, wherein third current collector layers, each composed of a porous electric conductor, are placed in the plurality of gas exhaust flow channels, respectively, and the third current collector layers have a porosity greater than that of the plurality of first current collector layers.
15. (Previously Presented) The solid oxide fuel cell according to claim 7, wherein third current collector layers, each composed of a porous electric conductor, are placed in the

plurality of gas exhaust flow channels, respectively, and the third current collector layers have a porosity greater than that of the second current collector layers.

16. (Original) The solid oxide fuel cell according to claim 2, wherein the plurality of first current collector layers each facing the fuel electrode carry fuel reforming catalyst.

17. (Withdrawn) A solid oxide fuel cell comprising:

- a plurality of electric power-generating elements, each including a solid oxide electrolyte, a porous oxidizer electrode on one surface of the solid oxide electrolyte, and a porous fuel electrode on the other surface of the solid oxide electrolyte;

- current collector layers for the oxidizer and fuel electrodes, respectively, of one of the plurality of electric power-generating elements;

- a separator disposed between adjacent current collector layers of an adjacent two of the plurality of electric power-generating elements that electrically interconnects the adjacent two of the plurality of electric power-generating elements;

- wherein the separator includes an oxidant gas supply flow channel in communication with a plurality of oxidant gas blowout ports formed within a surface of an associated one of the current collector layers which is disposed adjacent the oxidizer electrode of an associated one of the adjacent two of the plurality of electric power-generating elements;

- a plurality of oxidant gas exhaust flow channels formed inwardly from a surface of the associated one of the current collector layers, wherein the plurality of gas exhaust flow channels are configured to receive consumed gas that is pushed by a fresh supply of oxidant gas out of the oxidant gas blowout ports and to dissipate the consumed gas over an entire area of the surface of the associated one of the current collector layers;

- wherein the separator has a fuel gas supply flow channel and a plurality of gas supply branch flow passages branched off from the fuel gas supply flow channel, wherein the gas supply branch flow passages are in communication with a plurality of fuel gas blowout ports, wherein the fuel gas blowout ports are formed within the surface of the associated one of the current collector layers which is disposed adjacent the fuel electrode of the other one of the adjacent two of the plurality of electric power-generating elements;

- a plurality of fuel exhaust flow channels formed inwardly from a surface of the associated other one of the current collector layers, wherein the plurality of gas exhaust flow

channels is configured to receive consumed gas that is pushed by a fresh supply of fuel gas out of the fuel gas blowout ports and to dissipate the consumed gas over an entire area of the surface of the associated other one of the current collector layers.

18. (Currently Amended) The solid oxide fuel cell according to claim 1, wherein the plurality of gas ~~supply~~ exhaust flow channels divide ~~a surface~~ the second surface of the associated one first current collector layer into a plurality of sub-areas comprising ~~[[of]]~~ a first group of sub-areas disposed on the outskirts of the associated one first current collector layer and opening at the periphery of the associated one first current collector layer and a second group of sub-areas distant from the periphery of the associated one first current collector layer, and wherein the gas exhaust flow channels surround and define the sub-areas of the second group, respectively, and wherein the plurality of blowout ports are disposed within the plurality of sub-areas, respectively.

19. (Currently Amended) The solid oxide fuel cell according to claim 18, wherein the plurality of gas supply branch flow channels passages run through the associated one first current collector layer to terminate at the plurality of ~~sub-areas~~ blowout ports, respectively, to blow gas out ~~[[to]]~~ of each of the plurality of sub-areas.

20. (Withdrawn) A solid oxide fuel cell comprising:

a plurality of electric power-generating elements, each including a solid oxide electrolyte, a porous oxidizer electrode on one surface of the solid oxide electrolyte, and a porous fuel electrode on an other surface of the solid oxide electrolyte;

current collector layers placed to cover the porous oxidizer and fuel electrodes, respectively, of one of the plurality of electric power-generating elements; and

a separator disposed between adjacent current collector layers of an adjacent two of the plurality of electric power-generating elements and electrically interconnecting the adjacent two of the plurality of power-generating elements;

wherein the separator includes an oxidant gas supply flow channel facing one surface of an associated one of the adjacent current collector layers which is disposed adjacent the porous oxidizer electrode of an associated one of the adjacent two of the plurality of electric

power-generating elements;

wherein the associated one of the adjacent current collector layers which is disposed adjacent the porous oxidizer electrode has a plurality of oxidant gas supply branch passages branched off from the oxidant gas supply flow channel and a plurality of oxidant gas exhaust flow channels formed inwardly from an other surface thereof;

wherein the plurality of oxidant gas supply branch passages allow oxidant gas within the oxidant gas supply flow channel to flow from the one surface of the associated one adjacent current collector layer to the other surface of the associated one adjacent current collector layer to blow the oxidant gas out of the other surface toward the porous oxidizer electrode of the associated one of the plurality of electric power-generating elements;

wherein the plurality of oxidant gas exhaust flow channels run through the associated one adjacent current collector layer to distribute consumed gas over an entire area of the other surface of the associated one current collector layer which is disposed adjacent the porous oxidizer electrode;

wherein the plurality of oxidant gas exhaust flow channels terminate at a plurality of different points on a periphery of the associated one current collector layer which is disposed adjacent the porous oxidizer electrode to exhaust the consumed gas out of the periphery;

wherein the separator includes a fuel gas supply flow channel facing one surface of an associated one of the adjacent current collector layers which is disposed adjacent the porous fuel electrode of an associated one of the adjacent two of the plurality of electric power-generating elements;

wherein the associated one of the adjacent current collector layers which is disposed adjacent the porous fuel electrode has a plurality of fuel gas supply branch passages branched off from the fuel gas supply flow channel and a plurality of fuel gas exhaust flow channels formed inwardly from an other surface thereof;

wherein the plurality of fuel gas supply branch passages allow fuel gas within the fuel gas supply flow channel to flow from the one surface of the associated one adjacent current collector layer which is disposed adjacent the porous fuel electrode to the other surface of the associated one adjacent current collector layer which is disposed adjacent the porous fuel electrode to blow the fuel gas out of the other surface toward the porous fuel electrode of the associated one of the plurality of electric power-generating elements;

wherein the plurality of fuel gas exhaust flow channels run through the associated one adjacent current collector layer to distribute consumed gas over an entire area of the other surface of the associated one current collector layer which is disposed adjacent the porous fuel electrode;

wherein the plurality of fuel gas exhaust flow channels terminate at a plurality of different points on a periphery of the associated one current collector layer which is disposed adjacent the porous fuel electrode to exhaust the consumed gas out of the periphery.